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ABSTRACT

The problems with using Piagetian theory to explore language-thought relationships are two-fold. First there are methodological problems, including the lack of experimental controls and the lack of uniform criteria by which cognitive operations are identified. A second difficulty is the questionable practice of interpreting child language development in terms of adult language use. Because of these difficulties, researchers hypothesizing a language-thought relationship within Piagetian parameters have three options. The first option is to assume that cognitive operations always precede linguistic structure. This option implies that language is not a good index of cognitive development, that nonlinguistic assessment techniques must be developed, and that language is not a form of thinking in its own right. The second option is to assume synchrony, or an essentially isomorphic relationship between language and thought. This assumption implies that language can be used to determine cognitive operations, that child language is distinct from adult language, and that language processes should not be distinguished from other forms of thought. The third position is that individual cases dictate whether linguistic structures give rise to cognitive operations, whether the reverse is true, or whether there is synchrony. The wealth of evidence supporting this variability in language-thought relationships indicates that better criteria are needed for delineating cognitive operations with respect to language structures. (RL)

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THE PLACE OF LANGUAGE IN PIAGETIAN THEORY

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THE PLACE OF LANGUAGE IN PIAGETIAN THEORY

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The relationship between language and thought is often seen as an important one in many respects: e.g.

1. as a general psychological issue. Language is one of the more obvious forms of human behaviour. The extent to which it accurately communicates an individual's feelings, ideas, intentions, is a matter of concern to anyone interested in those inner states.

2. in education we have been greatly concerned with the possibility that some children may be linguistically deprived or disadvantaged - not especially, I think, because it has social consequences, but more because we believe that intellectual growth and performance will suffer.

As Piaget's theory is perhaps the most influential one in the field of cognitive development I should like to explore the implications it has for our understanding of the language-thought relationship. Some of the points at issue have already been explored as part of a general critique of the theory (Brown and Desforges, 1979).

Basic Theory

Piaget never made a full and detailed study of language acquisition, and of his most substantial contribution, Language and Thought of the Child even Sinclair-de-Zwart (1969) was moved to admit that "it contained far more thought than language". Nevertheless, there is sufficient in the writings of the Genevan School to form some fairly clear ideas of how language is viewed (Karmiloff-Smith, 1979; Piaget, 1954; Sinclair-de-Zwart, 1969).

Piaget argued that language was merely one of a number of semiotic functions (i.e. modes of symbolism) which all derived from a common non-verbal base (N.B. not from rudimentary vocalisations as some linguist might suggest). In the young child a progressive evolution from sensori-motor schemas is said to be signified by the advent of deferred imitation, symbolic play, the development of mental images, and first linguistic utterances. These are the earliest manifestations of the internal representations of outside events. Considerable emphasis is placed upon this notion, and whilst it is clear that linguistic utterances are not thought to be the earliest form of representation, it seems reasonable to suppose that by the time the semiotic functions are under way, language features prominently amongst them. It therefore seems reasonable to suppose that one might expect a partial isomorphism between thought processes and the structure of linguistic utterances.

At the end of the sensori-motor period the child is described as able to decentre sufficiently to enable him to function fairly efficiently in the immediate environment. With the development of the semiotic functions the restrictions imposed by the immediacy of the environment are overcome. The child will be able to form cognitive plans, he will accrue knowledge in a form which is more

conventional and recognisable (as opposed to a repertoire of actions) and he will experience a desire to communicate his knowledge. Note that these are posited as outcomes of the emergent semiotic functions - and language is one of them.

In so far as language is customarily thought of as a means of communication it would be easy to suppose that it is interaction with the social environment which is the stimulus for cognitive change - but this is firmly rejected. Whilst at a later time language will be assigned a more central and autonomous role, up to, and throughout the concrete operational stage it is only a part of a much larger complex of processes.

In fact the Genevan views repeatedly insists that language is not a sufficient condition for the development of cognitive operations, nor is it a necessary condition. Logical operations are said to be co-ordinations among actions before they are transposed into verbal form, so that language cannot account for their formation: it is "by no means the source of such co-ordinations" (Piaget, 1968). Evidence for this position is well-known, and is largely derived from work with language impaired subjects (Oléron, 1957; Furth, 1966).

Yet it seems that we are being offered two views of language - the first which gives rise to an internal, semiotic function, one of a number by means of which the individual represents events; the second a communicating device with which the individual will communicate the products of his thought processes.

In the conventional expositions of Piagetian Theory these two uses give rise to some problems, as we shall see. However, it is true to say that at some time Piaget did suggest that there was another possibility - that instead of always expressing existing logical structures it may sometimes be the case that there is parallel development in the two domains (Piaget; forword to Ferreiro, 1971). The ramifications of this do not appear to have been fully explored, though noted by several authorities.

Prior to this statement Furth (1970) has tried to account for the fact that language lagged behind thought processes by suggesting that the initial acquisition of lexical items was at a figurative level, whereas semantic interpretation was dependent upon operative functioning. Exactly how this would come about is not clear. It will be recalled that figurative knowledge is said to have its origins in perception and imitation, and is primarily what is known. Operative knowledge is derived from the individual's personal interactions with that knowledge. Whether such a distinction is meaningful, and, more importantly, whether it is useful is a moot point. Many of the lexical items indicative of familiar operations involve terms such as "bigger", "less", "more" etc. I am not sure how one would draw a distinction between the figurative and operative knowledge of such items.

That language development is preceded by cognitive development is still the predominant impression given in Genevan studies. Perhaps it is the case that linguistic structures, as a class, are "resistant" to change, and that the delay is another example of that well-known phenomenon "décalage" of which we have written elsewhere. In brief, it seems impossible to predict the "resistance" of items, and the existence of décalage is so widespread as to cast doubt upon the notion of structure d'ensemble.

Apart from presenting an intriguing intellectual puzzle for those with

nothing better to do there are some more down-to-earth implications of this issue.

Practical Implications

The status of language in Piagetian studies has led to criticisms on a number of counts. At the most basic level, the method of critical exploration requires a unique dialogue with each subject. Whilst this may 'raise the hackles' of the 'experimental control' brigade, it probably has much to be said in its favour. However, some other issues are not so readily dismissed.

Smedslund (1977) has pointed out that, in order to decide whether a child is behaving logically, we must take for granted that he has correctly understood all the instructions. Yet the only way in which we can dtermine this is by observing his behaviour and taking it for granted that it is logical with respect to his understanding. So the method of critical exploration obliges the researcher to choose which he will take for granted and which he will study.

In the field of psychotherapy there is one tradition which supposes that the patient is logical within the confines of his understanding (i.e. some interpretations of schizophrenia). However, this would be an unusual supposition on which to base a study of the growth of logical thinking in the child. It is, none-the-less, an interesting hypothesis - that logical structures do not change qualitatively, but the child's view of the problem does.

A second issue concerns the criteria by which operations are identified. The Genevan protocols demand that the presence of an operation be confirmed by the child's correct judgement and accompanying explanation : "special attention should be paid to the child's justification of his answers...." (Inhelder and Sinclair, 1969). They even go so far as to criticise the "judgement only" criterion used by others as not demonstrating true operations. Siegel (1978) comments that "it would seem to be a paradox to postulate the independence of language and thought, and then to rely on language to infer the existence of certain kinds of thought". She overstates the case, for there is no claim to 'independence', but even if we substitute 'possible asynchromy' there is still a paradox. If language is not a sufficient, nor even a necessary condition for cognitive acquisitions, why is it a necessary criterion to establish their presence?

Linda Siegel was, in fact, arguing for the complete independence of language from many of the pre-operations she investigated. Using non-verbal (or more accurately minimal verbal) protocols she showed 3 and 4 year-olds sets of stimulus cards with alternative displays of numbers of objects or sizes of objects on them. The children were rewarded for pointing out the 'big', 'little' or 'same' displays. She predicted that (a) the addition of verbal cues should not influence the results (i.e. "which is the big one?"), and (b) there would be no necessary relationship between a child's ability to solve a problem and his ability to describe the solution with appropriate language.

Her results indicated a marked difference between 3 and 4 year-olds. The former were uninfluenced by linguistic cues, but not the latter. Furthermore, 3 year-olds more frequently passed the concept attainment task and failed an associated language task. Only one or two children succeed-

ed on the verbal task and failed the concept task. The author concluded that there was, therefore, no reason to require judgements plus explanations from the three year-olds, but also that there was strong evidence that the relative independence of operations and language was disappearing in the four year olds. Thus the traditional criteria would give reasonably accurate assessments of 4 year-olds, but many false negative classifications for 3 year-olds. It is an interesting 'aside' to point out how reminiscent of the work of the Kendler's this study is.

The problematic nature of child language is intensified by the recent work of Annette Karmiloff-Smith (1979). Her analyses of the ways in which young children used language suggested that it was inappropriate to analyse their utterances in terms of adult usage.

Take, for example, an exerpt from Piaget's work, cited by this author:

'Piaget and the child J walk along a road each morning. At 2:6 she uses "the slug" for slugs on the road.
At 2:7 "There it is" on seeing one. Then on seeing another ten yards away "There's the slug again."
Piaget - "Is it the same?"
J - "Yes"
Piaget - "Another Slug?"
J - "Yes"
Piaget - "Another, or the same?" - The question obviously has no meaning for J.'

(Piaget 1951 p.225- K-S p 229).

Karmiloff-Smith suggests that interpretation of this episode in terms of adult language use is erroneous, and that the question did indeed have meaning for J. She argues that the phrase "encore la limace" (translated colloquially as "there's the slug again") shows similarities with her own data, in which children use "the" deictically i.e. as a means of emphasis, not anaphorically, i.e. as a means of singling out a specific example. The 'sameness' she supposes, relates to the species, not the individual specimen. There are implications here for the supposed "egocentric" speech.

So there is some confusion. Are we to adopt judgement plus explanation as criteria? If so, on what grounds? That language and operations are isomorphic? And by what criteria shall we judge the explanations? Or should we suppose that judgements may be in advance of explanations, and ignore the Genevan convention?

It would seem that we have 3 options open to us:

1) To assume that operations always precede linguistic structures.
   The implications: a) language is not a good index. It would lead to frequent false negative errors, but would eliminate false positive errors.

   b) we must develop non-linguistic assessment techniques.

   c) we find a reason for the delay. It suggests

that language cannot be a form of thinking in its own right. It is merely a communication mechanism between people. That is, we must think something before we can say it. Alternatively, it could be a part of the structure of thought, but it is always resistant and gives rise to décalage.

2) We can assume synchrony, as essentially isomorphic relationship between language and thought.

   (a) we can use language to determine operations, provided we check that it is a genuine expression and not 'parroting'. So to be on the safe side we adopt 'belt and braces', judgement and explanation.

   (b) we beware of judging child utterances by adult standards, or we will make false positive and false negative errors.

   (c) can we use language to indicate all forms of thought? Even egocentric thought which is 'non-communicable'?

   (d) we would then argue that it is not meaningful to distinguish between language processes and other forms of thought. Whilst there may be décalage of a minor nature, essentially the structure d'ensemble of say, concrete operations, would include its linguistic aspects.

3) The third position is that there is no reason to expect an invariable relationship between language and thought. In some cases we may find linguistic structures giving rise to cognitive operations, at other times the reverse, or sometimes there will be synchronous development, i.e. the u/g question, "What is the relationship between language and thought?" may be a non-question. There may not be a relationship.

   (a) under these circumstances we can only stipulate criteria for the presence of an operatory structure when we know how it relates to language.

   (b) in the absence of this knowledge we can only be certain of its presence if both judgement and explanation are present. In so doing we may make a lot of false negative errors.

   (c) there is a good deal of evidence to support this position.

We have already seen that non-linguistic techniques sometimes produce different classifications from linguistic techniques. Furthermore, the Genevans already accept that at the level of formal operations the influence of language is more crucial (Piaget, 1972). And Siegel has suggested changes occurring as early as 4 years.

McNamara (1972) has suggested that there may be situations in which the communicable aspects (i.e. the words uttered) become intelligible because the context in which they occur is already understood. In his own words "infants learn their language by first determining, independent of language, the meaning which a speaker intends to convey to them". This is clearly in keeping with the predominant Genevan position. It would lead us to accept a 'judgements' criterion for the presence of an operation, not a 'judgements-plus-explanation'.

Karmiloff-Smith, on the other hand, tells us that sometimes children tend to adopt one, essentially correct usage of an utterance, but to employ it too liberally. The choice of one function of a word over another could be seen as simply the recognition of the salience of one particular context; this would be in keeping with McNamara's view. But she rejects this, arguing that the characteristics of the linguistic input may also be important. As time progresses new alternative functions are adopted. This suggests that there is some reverse influence, language informing understanding. And it may be that in some instances this direction of influence predominates. If Karmiloff-Smith is correct she may simply be describing a process which is different from, but has equal probability of occurence to, that described by MacNamara. That is, the child may sometimes be led to discriminate between ostensibly similar events by a realisation that the associated verbal utterances are different. At other times the realisation that contexts are different may have an effect upon the verbalisation produced.

Thus the imponderables in the Genevan position open up a range of possibilities. In doing so it is at its most fruitful as a theory. I am only sorry that too often it is adopted as the model of cognitive development. There are too many problems in it for that.

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